

Topic: SURGERY FOR THYROID CANCER

Title: Radio-guided surgery for non-I¹³¹-avid thyroid cancer.

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SUMMARY

Objective: The authors report in a large series the use of radio-probe-guided surgery (RGS) in non radioiodine-avid, well-differentiated thyroid cancer (DTC).

Design: Thirty-seven patients with loco-regional recurrent, non radioiodine-avid DTC were studied with ^{99m}Tc-sestamibi directed RGS using a handheld gamma probe as an intra-operative detector.

Outcome: Twenty-three women and 14 men were followed after RGS for 35.4 ± 12.5 months (range 9-57). There were 33 papillary (one "tall" cell variant), 2 follicular, and 2 Hürthle cell cancers. In 7 patients, thyroid cancer recurred in the neck while cervical lymph node metastases were found in 31 patients (one patient had papillary cancer both in the thyroid bed and cervical lymph nodes). Sixty-six discrete nodules ranging from 6 to 45 mm (mean tumor diameter: 18.4 ± 8.5 mm) were identified by both high-resolution ultrasound and ^{99m}Tc-sestamibi probe guided RGS. After RGS, Tg (thyroglobulin) fell in 33 of 37 patients and mean target/non target sestamibi uptake ratios decreased in all 37 patients ($P < 0.0001$).

Conclusion: These data confirm the earlier observations by the same group of authors that a ^{99m}Tc-sestamibi intra-operative gamma probe can be used to identify and guide resection of recurrent tumor and involved lymph nodes in loco-regional metastases of non radioiodine-avid thyroid cancer.

COMMENT

The ability of differentiated thyroid cancer (DTC) to concentrate radioiodine can be lost in as much as 30-40% of cases (especially in older patients, as well as in more aggressive and less well differentiated types of carcinomas), for instance after the repeated administration of radioiodine to treat local recurrences or loco-regional and distant metastases. Although such lesions do not concentrate RI¹³¹, they maintain some differentiated functions such as the ability to produce Tg, which is highly useful to help diagnose their presence. High resolution ultrasound has also proven useful in the identification of small lymph nodes, but alone it cannot

discern the presence of metastases. Scintigraphy with radio-pharmaceuticals (with avidity for thyroid cancer cells) has also been demonstrated to be useful in the diagnosis of such lesions. Combined with high resolution ultrasound, ^{99m}Tc-MIBI scintigraphy can be used to diagnose the presence and localization of loco-regional metastases in patients with thyroid cancer that no longer concentrate radioiodine. One of the few therapeutic options left for such cases is surgical removal of the lesions. Surgical intervention can be facilitated by the use of RGS (Radio-guided intra-operative Probe for Surgery) with the ability to positively identify involved lymph nodes.

The present study expands the previous experience of this group, reported originally on 8 patients, and now concerning 37 patients, who all had their recurrent thyroid cancer successfully localized and extirpated using this combined approach and surgical technique. Twenty-eight of 37 patients were considered to be disease-free during the follow up. The present study does not

allow to directly assess the efficacy of RGS in the overall treatment of thyroid cancer, nor does it allow to compare RGS with other existing modalities for the intra-operative localization of thyroid cancer. This study, however, demonstrates the applicability of this approach in the treatment of loco-regional recurrence of non radioiodine-avid thyroid cancer. *(Daniel Glinzer, M.D.; Ph.D.)*

See Figures below

